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The Construct, Dimensionality and Measurement

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Abstract

This paper reports the results of a research aimed at conceptua-
lizing and developing valid measurements of key dimensions of a strategy
construct -- termed Strategic Orientation of Business Enterprises. This
construct is defined by addressing four important questions in terms of
six key dimensions. An evaluation of the measurement properties indicated
that the operational measures developed here largely satisfied the
criteria for unidimensionality, convergent, discriminant, and predictive
validity. Implications and lines of extensions are outlined.

Strategic management research is at a threshold today. In moving away from its traditional case-based origins, the field has increasingly focused on developing and testing mid-range theories. The success of this transition is largely dependent on a systematic program of measurement of key strategy concepts. Reflecting this criticality, Schendel and Hofer, noted:

> "[S]trategy is the key concept underlying the new direction of the strategic management field... A definition of the strategy construct acceptable and usable by all is needed. In particular, a definition is needed that will lend itself to measurement, comparison among firms, and which can be related to goals and objectives as well as to performance results." (1979; pp. 516-517).

Although the strategy concept has been operationalized using a variety of approaches (see Ginsberg, 1984; Hambrick, 1980; Snow & Hambrick, 1980 for detailed reviews) the linkage between the theoretical definition and operational measures is often specified in loose and univerifiable ways.

A recent review of the measurement "quality" of strategy measures, assessed in terms of important validity components indicated that the measurement stream has been historically neglected, although several recent studies are increasingly sensitive to this issue (Venkatraman & Grant, 1986). Thus, while the substantive stream (focusing on relationships between constructs) has progressed steadily, the measurement stream (focusing on the relationship between the empirical observations and their underlying theoretical constructs) has been relatively neglected (See Fredrickson, forthcoming for an exception).

The need to integrate construct development and measurement is fairly evident. As Nunnally noted, "all theories in science concern statements mainly about constructs rather than about specific, observable variables" (1978; p. 96). Thus, construct development is central to theory-building. In addition, since the interpretation of the

relationship between constructs is closely linked to the relationships between a construct and its measures (See for instance, Schwab, 1980), construct _measurement_ (i.e., validation) is central to theory-testing. Rooted in this logic, this study focuses on the development and measurement of one construct -- Strategic Orientation of Business Enterprises (labeled, STROBE), which is a central construct in strategic management. The purpose of this paper is to develop the conceptual underpinnings of the STROBE construct, derive its dimensionality and subsequently develop and validate operational measures for its key dimensions.

THE THEORETICAL FRAMEWORK OF THE STROBE CONSTRUCT

Delineating the Construct's Domain

A major task in conceptualizing any construct lies in adequately delineating its domain. This is particularly complex for strategy constructs given their wide array of meanings. The conceptual domain of the STROBE construct is delineated by addressing four important questions. These are:

1. Should the construct refer only to "means" or both "means" and "ends"?

2. Should the construct be defined at a particular level of the organizational hierarchy or should it be level-free?

3. Should the domain of the construct be restricted to some "parts" of strategy or should it reflect a broader perspective?; and

4. Is the distinction between "intended" and "realized" strategies relevant for conceptualizing and measuring this construct?

We recognize the controversial nature of these questions, where opposing viewpoints are likely to be equally valid and cannot be easily reconciled.

Our focus, consequently, is on examining these issues with the objective of adopting a particular view that guides the development and measurement of the STROBE construct.

"Means" versus "means and ends" debate. This is an important, but a controversial issue since it addresses the scope of strategy. In strategic management, some authors favor the distinction between strategies (viewed as means) and goals (viewed as ends) while others treat strategy as a common unified concept encompassing goals and means (see Hofer & Schendel, 1978; pp. 18-19 for a comparative discussion on the different views).

Following Schendel and Hofer (1979), and MacCrimmon (forthcoming), we view goals and goal formulation as distinct from strategies and strategy formulation. Thus, in our development of the strategy construct, we focus only on the means adopted (i.e., actions and resource deployments) which are distinct from the desired goals (i.e., ends, purposes or objectives). This view is advantageous in two important ways. One is that it provides a specific and a focused definition of STROBE and the other is that such a restricted definition can be used to subsequently examine important relationships between goals (ends or objectives) and strategies (means) to evaluate the effectiveness of specific strategies within contexts defined by specific goals.

Choice of the strategy level. In contrast to the general disagreement over the scope of the strategy concept, there appears to be more agreement on the categorization of the levels of organizational strategy. Most discussions of the strategy concept reflect a three-level categorization -- corporate, business, and functional strategies (e.g., Grant & King, 1982; Hax & Majluf, 1984; Hofer & Schendel, 1978; Lorange & Vancil, 1977). Corporate-level strategy is concerned with answering the

question -- "In what set of businesses are we and should we be in?" Accordingly, strategy at this level has been viewed as a collection of businesses (e.g., Grant & King, 1979) or in terms of the pattern of relationships among the different businesses constituting the corporate portfolio (e.g., Rumelt, 1974).

Strategy at the business-level (also termed as strategic business unit or SBU) addresses the question -- "how do we effectively compete in each of our product-market segment," and is rooted in the requirement of matching environmental opportunities and threats with the efficient deployment of organizational resources (Bourgeois, 1980; Grant & King, 1982; Hofer & Schendel, 1978; Porter, 1980). Strategy at the functional level focuses on the maximization of resource productivity within specified functions such as marketing or manufacturing and is generally derived from the business-level strategy (Hofer & Schendel, 1978).

We focus at the level of the business unit for the following reasons. Since strategic management aims to integrate key functions toward adopting a general management perspective (Schendel & Hofer, 1979), a functional level focus is not particularly important. Similarly, as organizations increasingly diversify (Chandler, 1962; Rumelt, 1974) and operate in multiple product-market segments, many strategy issues relevant at the SBU level cannot be directly aggregated to the corporate level. Business-level is also considered to be appropriate since environmental influences such as market concentration, competitive forces and stage of life cycle can be responded through consistent strategic decisions at this level. Thus, while other levels may not be inappropriate for conceptualizing the STROBE construct, this study is focused at the SBU level.

"Parts" versus "holistic" perspectives. This issue relates to the distinction between "parts" of strategy and strategic typologies reflecting a more holistic perspective (Hambrick, 1980). For example, the categorization proposed by Buzzell, Gale, and Sultan (1975), and Porter (1980) reflect the competitive or the product-market sector of the overall strategy concept, while definitions and conceptualizations of strategy adopted by Miller and Friesen (1978), Miles and Snow (1978) and Mintzberg (1978) reflect a much broader perspective.

This study focuses on a "holistic" notion of organizational strategy based on two reasons. One is that a focus on one or two areas such as marketing (e.g., market share position, new product introduction frequency or geographical coverage) or manufacturing (e.g., research and development and product quality) taps only a functional orientation which does not truly reflect the general strategic orientation of a business. The second reason is that although many holistic definitions of strategy have been offered (e.g., Andrews, 1971; Chandler, 1962; Grant & King, 1982; Miles & Snow, 1978; Mintzberg, 1978), measurement schemes have not adequately operationalized such definitions. Thus, by operationalizing the construct in holistic terms the results of this study can be used to more directly employ such richer definitions in strategy research.

Consequently, while previous research studies have defined (and operationalized) strategy in terms of resource allocations to important but narrowly-defined areas such as marketing or manufacturing, this study seeks to consider a wider set of means adopted by businesses.

Distinction between "intended" and "realized" strategies. The fourth issue to be addressed in developing the theoretical framework of the STROBE construct relates to the distinction between "intended" and

"realized" strategies (Mintzberg, 1978). As argued by Mintzberg and Waters:

> "Strategy always has been defined in terms of intentions, guidelines for future - essentially in terms of plans... But conceiving strategy in terms of intentions means restricting research to the study of the perceptions of what those who, it is believed, make strategy intend to. And that kind of research - of intentions devoid of behavior - is simply not very interesting or productive." (1982; p. 465)

By viewing "realized" strategy as a "pattern in a stream of decisions" (Mintzberg, 1978), strategies become consistencies in the behavior of organizations (Mintzberg & Waters, 1982). In line with our earlier decision to view strategy as a pattern-of-decisions (i.e., a holistic perspective), and in conjunction with the arguments by Mintzberg and Waters, our focus is on the realized strategies.

Definition of the STROBE Construct. The specific views adopted in relation to the above four questions provide a basis to formally define the STROBE construct as:

> "The general pattern of various means employed (i.e., realized) to achieve the business goals, with a particular emphasis on the business-unit level of the organizational hierarchy."

Specifying the Construct's Dimensionality

We begin with a fundamental assumption that STROBE is a multi-dimensional construct. However, while researchers may tend to view strategy in multi-dimensional terms, due to the wide disagreement over the construct's scope (means versus means and ends) as well as many other critical issues, a commonly accepted list of strategy dimensions is not presently available.

A priori versus a posteriori. Given that STROBE is conceptualized in multi-dimensional terms, its dimensionality can be arrived at one of

two different ways. One is a priori to derive the different dimentions hypothesized to represent the construct based on the available theoretical support. Here, the dimensionality is prespecified and subsequently validated by testing the model against data, where the data analytic scheme is viewed as a means towards confirmation or rejection of the theoretical dimensions derived (See for instance Dess and Beard's, 1984 study on Aldrich's (1979) dimensions of organizational environments; and the Aston Program on organization structure -- Pugh and Hickson, 1976; Pugh, Hickson, Hinings and Turner, 1978).

The other approach is not to pre-specify the dimensions (e.g., Blackburn, 1982) but to empirically derive them a posteriori through data analytic techniques such as factor analysis or multi-dimensional scaling (e.g., Blackburn & Cummings, 1982). This approach is generally considered to be "theory-free" and is adopted only in those cases where little theoretical basis exists for a priori deriving the dimensions. In such cases, there exists a real danger that the dimensions may not be interpretable for use in substantive research and that they may not be stable over different study settings.

Given our intention to develop operational measures for important theoretical dimensions of strategic orientation rather than uncover dominant dimensions through data-analytic methods, we decided to specify the dimensions a priori. Based on a critical review of the research literature, we identified six important dimensions of strategic orientation. These are summarized in Table 1 with brief descriptions provided in the following paragraphs.

Insert Table 1 About Here

Aggressiveness. This trait refers to the posture adopted by a business in its allocation of resources for aggressive strategies. These may be based on product innovations and/or market development (Miles & Cameron, 1982) or high investments to improve relative market share and competitive position (e.g., Buzzell, Gale & Sultan, 1975; Hofer & Schendel, 1978). It also reflects the notions of "explosion" (i.e., improve competitive position in the short-run) as conceptualized by Wissema et al (1980), and the strategy of "multiplication," i.e., expansion of market share by multiplying as noted by Vesper (1979) and the pursuit of market share as an important path towards achieving business unit profitability.

Analysis. This refers to the overall problem-solving posture, as noted by Miller and Friesen (1982). They consider this trait to be an important characteristic of the organizational decision-making, referring to the extent of "tendency to search deeper for the roots of problems, and to generate the best possible solution alternatives" (1982; p. 5). It also relates to the "comprehensiveness" trait conceptualzed and measured as an important construct of strategic management process by Fredrickson (1984). This trait also refers to the extent of internal consistency achieved in the overall resource allocation for the achievement of chosen objectives (Grant & King 1982) as well as the use of appropriate management systems (information and control systems; managerial reward systems; competitive intelligence systems, etc.). However, it should be noted that this trait does not reflect the "analyzer" behavior of the Miles and Snow (1978) typology, which simply indicates the middle range or balance between "purely prospecting" and "purely defensive" behavior. The prospecting and defensive traits are considered separately in the following paragraphs.

Defensiveness. This trait reflects defensive behavior (Miles and Snow, 1978), and is manifested in terms of emphasis on cost reduction and efficiency seeking methods. It also reflects Thompson's (1967) view of organizations seeking to defend their core technology as well as Miles and Cameron's (1982) concept of domain defense (i.e., preservation of one's own products, markets, and technologies) strategy.

Futurity. Few would disagree that the concept of strategy is firmly grounded in the notion of "desired future," and the process through which a business plans to reach the desired state (Andrews, 1971; Ansoff, 1975; Grant & King, 1982; Steiner, 1979). This trait indicates the extent of futurity reflected in key strategic decisions, in terms of the relative emphasis of effectiveness considerations versus efficiency focus. For example, emphasis on basic research can be argued to have a longer-term focus than application-oriented research programs which reflect a shorter-term focus. This trait is manifested through more emphasis to areas such as forecasting sales and customer preferences as well as formal tracking of environmental trends.

Proactiveness. This trait reflects proactive behavior in relation to participation in emerging industries, continuous search for market opportunities and experimentation with potential responses to changing environmental trends (Miles & Snow, 1978). It is expected to be manifested in terms of seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle.

Riskiness. This trait captures the extent of riskiness reflected in various resource allocation decisions as well as choice of products and markets. While risk-taking has been generally treated as an

individual level trait (e.g., at the level of the CEO), it is viewed here as an organization-level construct, similar to the view adopted by Miller & Friesen (1982). It is expected to be reflected in criteria for decisions such as resource allocation (Hertz & Thomas, 1983; Bowman, 1982) and the overall pattern of decision-making (Baird & Thomas, 1985).

Assessing Measurement Properties

The measurement quality can be assessed through a set of validity components.[1] In this study, we focus on the following componenets of validity -- internal consistency of operationalization (reliability and validity), convergent validity, discriminant validity, and nomological (i.e., predictive) validity.[2] The required analytical steps for the assessments are discussed in the following section on methods.

RESEARCH METHODS

Item Selection

An initial list of items was generated through an exhaustive review of the research literature related to the above dimensions. This list was evaluated by the researchers and a set of sixteen other researchers engaged in strategy research at the univeristy where this study was conducted. The purpose was to ensure adequate coverage of the domain of each of the six dimensions. The list was used as the basis to a set of 61 statements, which was evaluated by two independent judges to ensure that the wording is as precise as possible. Some statements were recast to be positively slanted while others were negatively worded to reduce the possibility that the respondents would simply agree or disagree with all the statements without providing adequate attention to reading and comprehending the questions.

This list of statements was administered to 39 executives who were participants in a management development program. The purpose was to ensure that the statements were understood without ambiguity. The results of this exercise indicated that most statements had a wide range of responses, and that the statements in general, were unambiguously worded.

Data

Data for this study were collected during 1984-1985 in two stages. A self-administered, structured questionnaire designed and administered according to Dillman's (1978) suggestions was used in both stages. The first mailing was to the presidents/chief executive officers of 250 strategic business units randomly chosen from the 1984 Directory of Corporate Affiliations. While 5 business units declined for reasons of company policy, 92 usable responses from as many units were received representing an effective response rate of 37.9%. Based on the preliminary data analysis at this stage, those items believed to be outliers to the core concept were eliminated. This enabled us to refine the questionnaire for the next stage of data collection.

In the second stage, the refined questionnaire was sent to 450 such managers randomly chosen from the 1985 Directory of Corporate Affiliations (after carefully checking that there was no overlap with the sample of the first stage). 110 usable responses (and 24 declines) were obtained, representing an effective response rate of 25.8%. The effective response rate for the two phases combind is over 30% which is considered higher than typical responses obtained from such target populations (Gaedke & Tootelian, 1976). The samples from the two stages were combined only after ensuring that there were no significant differences along a set of

strategic characteristics.[3] The sample size for the analysis is (n=202), and the sample is profiled in Table 2.

Insert Table 2 About Here

Data Analysis and Results

The basic choice for analyzing the data is between the use of exploratory factor analysis -- EFA (i.e., a scheme for exploring the underlying factor structure <u>without</u> prior specifications of the number of factors and their loadings), or the confirmatory factor analysis -- CFA (i.e., with specific specifications concering the factor-structure and their loadings). The CFA approach is chosen due to its ability to test an <u>a priori</u> theoretical structure against data, rather than derive an empirical factor structure -- which may neither be unique nor inter-pretable the light of the theory (Bagozzi, 1983). In comparing EFA and CFA, Bagozzi (1983) noted,

> "...in their pure forms, the EFA and CFA approaches can be thought of as end points on a continuum. At one extreme EFA represents a procedure for the discovery of structure, while at the other extreme, CFA is a technique for testing hypothesized structure formed on an <u>a priori</u> basis."
> (pp. 134-135)

Since the six dimensions have been theoretically specified, it is more logical to adopt the CFA approach. All the data analysis were conducted in line with the steps outlined in Figure 1, and based on Jöreskog and Sörbom's (1978) analysis of covariance structures. This approach is a general measurement scheme that allows the specification of

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Insert Figure 1 About Here

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errors in measurement and provides the opportunity to test evaluate important measurement properities (see Bagozzi, 1980 for an overview, and Bagozzi & Phillips, 1982 for an application of this approach for organizational research). The analytical schemes for the various assessments are in line with the "causal-indicator" model, where the operational indicators are reflective of the unobserved theoretical construct. In otherwords, the unobserved construct is thought to give rise to what we observe, and reflects the true-score theory in Psychology (Lord & Novick, 1968).[4] Detailed discussions on the interdependence between theory, measurement, and substance relationships can be found in Bentler (1978), Bagozzi (1984).

Figure 2 is a diagramatic representation of the set of validity assessments, namely, (a) unidimensionality and convergent validity, (b) discriminant validity, and (c) predictive validity.

Insert Figure 2 About Here

Undimensionality and convergent validity. Following Jöreskog's work and the conventions of structural equation modeling (e.g., Bagozzi, 1980), the model for unidimensionality and convergent validity is written as:

$$X = \Lambda \xi + \delta \tag{1}$$

where X is a vector of p measurements, ξ is a $k < p$ vector of traits, δ is a vector of unique scores (random errors), and Λ is a p x k matrix of factor loadings relating the observations to one underlying dimension. With the assumptions of $E(\xi) = E(\delta) = 0$; $E(\xi\xi') = \phi$,

and $E(\delta\delta') = \Psi$, the variance-covariance matrix of X can be written as

$$\Sigma = \Lambda\phi\Lambda' + \Psi \qquad (2)$$

where Σ is the variance-covariance matrix of observations, ϕ is the matrix of intercorrelations among the traits, and Ψ is a digonal matrix of error variance (θ_δ) for the measures.

Maximum likelihood (ML) parameter estimates for Λ, ϕ, ψ, and a χ^2 goodness of fit index for the null model implied by equations (1) and (2) can be obtained from the LISREL Program (Jöreskog & Sörbom, 1978). The probability level associated with the given χ^2 statistic indicates the probability (p) of attaining a large χ^2 value given that the hypothesized model is supported. The higher the value of p, the better is the fit, and as a rule of thumb, values of p > 0.10 are considered as an indication of satisfactory fit (Lawley & Maxwell, 1971).

Since exclusive reliance on the χ^2 statistic is criticized for many reasons (See Fornell & Larcker, 1981), researchers increasingly complement this statistic with the Bentler and Bonett's (1980) incremental fit index Δ--which is an indication of the <u>practicial significance of the model in explaining the data</u>. The index is represented as follows:

$$\Delta = (F_0 - F_k)/F_0 \qquad (3)$$

where F_0 = chi-square value obtained from a null model specifying mutual independence among the indicators, and F_k = chi square value for the specific model. The general rule of thumb is that Δ should be greater than 0.90 (Bentler & Bonett, 1980) although some argue that it should <u>ideally</u> exceed 0.95 (Bearden, Sharma & Teel, 1982).

Table 3 summarizes the results of assessments for unidmensionality for the six dimensions. It provides the following model statistics for

the assessment of goodness-of-fit: The χ^2 statistic, its associated degrees of freedom, p-level of significance, and the Bentler and Bonett Δ index. Based on columns (3) through (5), one can conclude that each of the six dimensions achieve unidimensionality and convergent validity at the monomethod level of analysis.

Insert Table 3 About Here

Internal consistency of operationalizations (Reliability). The above model specification for unidimensionality does not provide direct assessment of construct reliability. The typical approach for reliability assessment is in terms of the Cronbach α coefficient (Cronbach, 1951). It ranges from 0 to 1, has the desirable property of being a lower bound of reliability (Lord & Novick, 1968) and is a commonly-used index for evaluating the reliability of strategy measures (Venkatraman & Grant, 1986). As shown in column (3) in Table 4, the α coefficient ranges from 0.50 to 0.62, which may be considered acceptable lower bounds to reliability given the explanatory nature of the measure development exercise. Since this is merely an index with a specific range, the "threshold" value is not based on statistical considerations but one which is generally accepted within a particular field. In the absence of prior guidelines for strategy measures a value greater than the mid-point can be considered at least acceptable.[5] In addition, all the item-to-scale correlations were positive and significantly different from zero at $p < .01$.

In addition, where models allow for incorporating measurement error as done here, the reliability of measures can be assessed using the approach suggested by Werts, Linn, and Jöreskog (1974). Their reli-

ability, represented as ρ_c can be calculated as follows:

$$\rho_c = \frac{(\overset{n_1}{\underset{i=1}{\Sigma}} \lambda_i)^2 \; var(A)}{(\overset{n_1}{\underset{i=1}{\Sigma}} \lambda_i)^2 \; var(A) + \Sigma \; error \; variance} \tag{4}$$

where ρ_c is the composite measure reliability, n is the number of indictors, and λ_i is the factor loading which relates item i to the underlying theoretical dimension (A). In a practical sense, ρ_c represents the ratio of trait variance to the sum of trait and error variances. When ρ_c is greater than 50% it implies that the variance captured by the trait is more than that by error components (Bagozzi, 1981). Specifically, values of ρ in excess of 0.50 indicate that at least 50% of the variance in measurement is captured by the trait variance. As shown in column (4) in Table 4, all the ρ_c indices are greater than 0.50.

Insert Table 4 About Here

Discriminant validity. This refers to the degree to which measures of different dimensions of STROBE are unique from each other. This is achieved when measures of each dimension converge on their corresponding true scores which are unique from other dimensions and can be tested that the correlations between the pairs of dimensions are significantly different from unity. This requires a comparison of a model specifying the relationship between two dimensions with a similar model with this correlation constrained to equal one. A significantly lower χ^2 value for the model with the unconstrained correlation, when compared with the constrained model, provides support for discriminant validity. A χ^2

difference value with an associated p-value less than .05 (Jöreskog, 1971) supports the discriminant validity criterion.

Table 5 reports the results of fifteen pairwise tests conducted for discriminant validity. 13 of the 15 tests indicated strong support for the discriminant validity criterion. The two tests which failed to satisfy the discriminant validity criteria relate the analysis dimension to defensiveness and futurity. Since the conceptual domain of these dimensions do not overlap significantly and that they exhibit different patterns of relationships with the other dimensions, there appears to be no serious problem with this result. Thus, one can conclude that the discriminant validity criterion is largely satisfied by these dimensions.

Insert Table 5 About Here

Predictive validity. This is an important component of the construct assessment since it moves the logic of assessment from statistical domain of intercorrelations among the multiple indicators designed to capture the underlying trait (i.e., unidimensionality, reliability, convergent and discriminant validity) towards the substantive domain focusing on relationships that are best interpreted in the light of the received theory. More specifically, predictive validity seeks to evaluate if the measures behave in accordance with the theory that guided the measurement exercise. As Schwab noted in relation to the construct of organizational performance, [substantial] effort has been devoted to psychometric issues such as dimensionality, reliability, and errors of measurement.....relatively little concern, however, has been shown to the relationship that performance may have to other constructs as the basis

for providing evidence on the construct validity of performance per se" (1980; p. 14). An examination of the behavior of focal measures with the measures of theoretically-related constructs is nomological validation (Cronbach & Meehl, 1955) and predictive validity is considered to be a central part of it (Bagozzi, 1981).

In this study, predictive validity of the STROBE measures is assessed by examining between each STROBE dimension and two important dimensions of business performance -- growth (effectiveness) and profitability (efficiency).[6] This is represented in the form of structural relationships in addition to the measurement models. The structural relationship is represented as:

$$\eta = \Gamma\xi + \zeta \tag{5}$$

where, η = endogenous theoretical construct (i.e., performance), Γ = matrix of structural coefficients relating exogenous theoretical construct (i.e., STROBE dimension) to endogenous theoretical construct (i.e., performance dimension), ζ = residuals of endogenous theoretical construct.

Table 6 reports the results of the twelve tests carried out to relate each of the six STROBE dimensions to the two performance dimensions. Results of these assessments are broadly as expected and are discussed in the next section.

Insert Table 6 About Here

DISCUSSION

This study distilled six important dimensions of strategic orientation at the strategic business unit level. The data analyzed for this study generally support the consideration of these dimensions as unidimensional, and that the operational measures are reliable and valid. With the basic measurement properties thus established, it is appropriate to discuss the substantive issue of how each of the dimension relate to the other dimensions as well as with two dimensions of performance. These issues are discussed here.

Relationships among the STROBE dimensions

The pairwise tests carried out earlier in relation to discriminat validity assessment (see estimates for ϕ in Table 5) provide an indication of the relationships among the STROBE dimensions. The pattern of this result is discussed below in light of the received theory in strategic management. Before we discuss the results, we wish to distinguish the assessments for construct validation from the assessments for substantive validation. The former seeks to examine the degree of correspondence between the results obtained using a particular measurement scheme and the meaning attributed to those results. In contrast, substantive validation focuses on the specific relationships between constructs with a broadly defined theoretical framework, and these relationships are dependent on the results of construct validation tests. Any particular study can be interpreted either as support for construct validity or substantive validity depending on the veracity of the hypotheses linking the constructs studied (Schwab, 1980). Hence, it is essential to clarify that in discussing the results, we have taken them as evidence of construct validity rather than as tests of substantive relationships.

From Table 5, it is clear that the aggressiveness dimension, which largely reflects the market share seeking behavior of businesses is not significantly related to the other dimensions, except riskiness. This result is consistent with the expectation that the four other dimensions --analysis, defensiveness, futurity and proactiveness-- reflect a more balanced perspective of strategic orientation in contrast to aggressive market share seeking behavior. Further, the significant association with the riskiness dimension (ϕ = .253, t = 2.50, p < .01) is consistent with the extant research literature in marketing and strategic management implying a risky connotation for aggressive market share seeking behavior (e.g., Fruhan, 1972; Grant & King, 1982).

The analytical orientation of businesses seems to strongly covary with three key strategic characteristics such as defensiveness (ϕ = .947; t = 12.16, p < .01) futurity (ϕ = .90, t = 14.46, p < .01) and proactiveness (ϕ = .426, t = 4.48, p < .01). If we view the analytical orientation of a business in terms of its formal planning and decision-making mechansims which play a critical role in the formulation and evaluation of strategic alternatives, it is not surprising that businesses achieving high scores on this dimension also tend to score high on other key aspects of strategy except riskiness and aggressiveness which tend to characterize actions beyond the formal mechanisms. Perhaps, those businesses with strong analytical orientations are neither too risky nor too aggressive in pursuing market share in general. Similar logic can be employed to interpret the strong relationship between defensiveness and futurity (ϕ = .82, t = 9.41, p < .01) and between futurity and proactiveness (ϕ = .324, t = 3.24, p < .05), which reflect a longer term orientation in the resource allocation operations of a business.

Relationships between the STROBE dimensions and performance

The focus here is on the relationships outside the STROBE domain in terms of relating these dimensions to business performance, defined in terms of growth and profitability. These dimensions are operationalized using multi-item measures which satisfied the same set of measurement criteria as the strategy measures.[2]

Several interesting and significant results can be discerned from the results summarized in Table 6. All the γ coefficients are in the expected directions and 7 out of the 12 are statistically significant at p-levels better than .01. Some of these results are interpreted below. For example, aggressively pursuing market share has no significant effect (t = 0.937; ns) on growth trends while it has a significant negative effect (t = 2.43; p $<$ .01) on the current profitability position. This is consistent with the general thrust of the literature on the riskiness associated with the pursuit of market share in the overall business strategy (see for instance, Fruhan, 1972; Grant & King, 1979), but is counter to the Hambrick, MacMillan & Day (1982) study which reported that market share gains can be achieved without less of current profitability.

Similarly, the results that the analytical orientation of a business has a positive and significant effect on growth (t = 1.987; p $<$ .05) and on profitability (t = 3.23; p $<$ .01) is consistent with the literature which emphasizes the virtues of formal strategic planning and analytical decision-making (see for instance, King & Cleland, 1978; Lorange & Vancil, 1977; Lorange, 1979; Steiner, 1979). The effect of defensiveness on profitability is positive and significant (t = 3.64; p $<$ .01) while its effect on growth is positive but not satistically significant (t = 1.468; ns). These results are generally consistent with the extant

literature that emphasizes the need to defend one's present position (see for instance, Miles & Snow, 1978; Porter, 1980; Thompson, 1967).

The futurity dimension had no significant effect on both growth (t = 1.565; ns) and on profitability (t = 1.387; ns), while proactivness dimension had positive and significant effects on both growth (t=2.85; p< .01) and profitability (t = 4.49; p < .01), while riskiness had a negative and insignificant effect on growth (t = -0.117; ns) but a negative and significant effect on profitability (t = -4.066; p < .01).

Overall, the study results can be interpreted as providing adequate support for the construct validity of the measures developed here. However, these are merely first steps in a comprehensive program of research aimed at developing and employing "validated measures" in testing substantive relationships. Several lines of extensions are φ enumerated below. These are briefly discussed below.

Extensions

Four possible lines of extensions are opened up by this research study.

Replication and refinements. Beginning with a large pool of indicators and through successive stages of analysis and refinement, we arrived at this list of operational indicators for the six dimensions that satisfied important validity criteria. For strategy researchers they serve as an useful "first-cut" that can be refined through replication in different contexts. In that way, the stability of measurement properties can be assessed in a cummulative fashion.

Multiple informants. Our focus on a single senior-level informant for data collection was deliberate. We wanted to arrive at a list of acceptable indicators before proceeding to examine inter-informant

consistency. A logical extension is to evaluate the degree of shared consensus regarding the organizational-level phenonmenon of strategy that is being studied and measured. Such an extension would be useful to evaluate the degree of systematic method error attributable to different functional areas or hierarchical levels (Hambrick, 1982; Phillips, 1981).

Use of "different-methods". While multiple informants from the same organizational unit can be considered as "multiple methods" of operationalization under the assumption that their responses are obtained independently, they could conceivably share the same method bias and report in an unified voice. Such research designs are termed as "within-method" type of triangulation by Denzin, who noted the salient limitations of this type of triangulation as follows: "observers delude themselves into believing that ...different variations of the same method generate... distinct varieties of triangulated data. But the flaws that arise from using one method remain". (1978; pp. 301-302). Possible methods for satisfying this type of designs include data from external observers such as suppliers, competitiors, industry analysts as well as structured content analysis of published data (where available at the requisite level of analysis). Alternatively, perceptions of strategic orientation between corporate and business level would provide interesting perspectives on this issue.

Towards a richer taxonomy. Validated measures for key dimensions of strategy developed here can be used as input to develop a taxonomic scheme reflecting the internal logic among these dimensions. Such an approach, by virtue of this breadth and depth of domain-coverage, would be richer than any scheme that directly uses individual indicators.

CONCLUSIONS

This study developed the theoretical underpinnings of an important construct in strategic management, namely the strategic orientation of business enterprises. Subsequently, it derived its dimensionality and tested it by treating the individual dimension as the building block. Operational measures were developed and validated through the use of Jöreskog's Analysis of Covariance Structures. These operational indicators should serve as useful measures for strategy researchers in their efforts to test theoretical relationships.

Notes

1. The term validity has been used to describe many different components such as construct validity, convergent validity, predictive validity, face validity, content validity, discriminant validity, internal validity, external validity, statistical conclusion validity, etc. See Birnberg and McGrath (1982) for an attempt at a conceptual framework that highlights the interrelationships among these components.

2. Our restriction to these components reflects the "applied nature" of construct validation and follows the discussions in Bagozzi (1980), Venkatraman and Grant (1986).

3. The similarity of the two samples in terms of the importance attached to five business goals (such as market share, return on sales, cash flow, ROI, and sales growth rate) was assessed using the Kolmogorov-Smirnov (KS) test, which tests whether the two samples are drawn from the sample population. None of the KS $\underline{Z}$-statistics were statistically significant at $p < .01$, while one was marginally significant at $p < .05$.

4. Other approaches to operationalizations include the formative-indicators approach, and the symmetric indicators approach, which imply different analytical schemes, such as the partial least square method (See Fornell, 1982 for a discussion).

5. Nunnally's guideline in 1967 for psychological traits was that alpha should be in the range of 0.5 to 0.6, but in 1978, he revised it to be at least 0.7. If this can be interpreted as reflecting the progress made in construct refinement and development in the field of psychology, then given the present state of construct development in strategy, a level of 0.5 can be considered adequate. However, as we continually develop, the criterion would have to be reevaluated.

6. The growth dimension was measured using three indicators and the profitability dimension with five indicators. Details of the measurement tests are available on request, while the indicators are provided in Appendix II.

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Figure 1

Analytical Steps for Assessing Measurement Properties

Construct Definition and Dimensionality

Construct
Development

Select Items for Each Dimension

Assess Undimensionality and Convergent Validity
at the Monomethod Level of Analysis

Refine the Model (if necessary)

Assess Internal Consistency of Operationalization
and Calculate Measure Reliability

Construct
Validation

Assess Discriminant Validity With Other Five Dimensions

Assess Predictive Validity With the Two Performance
Dimensions

Use in
Substantive
Research

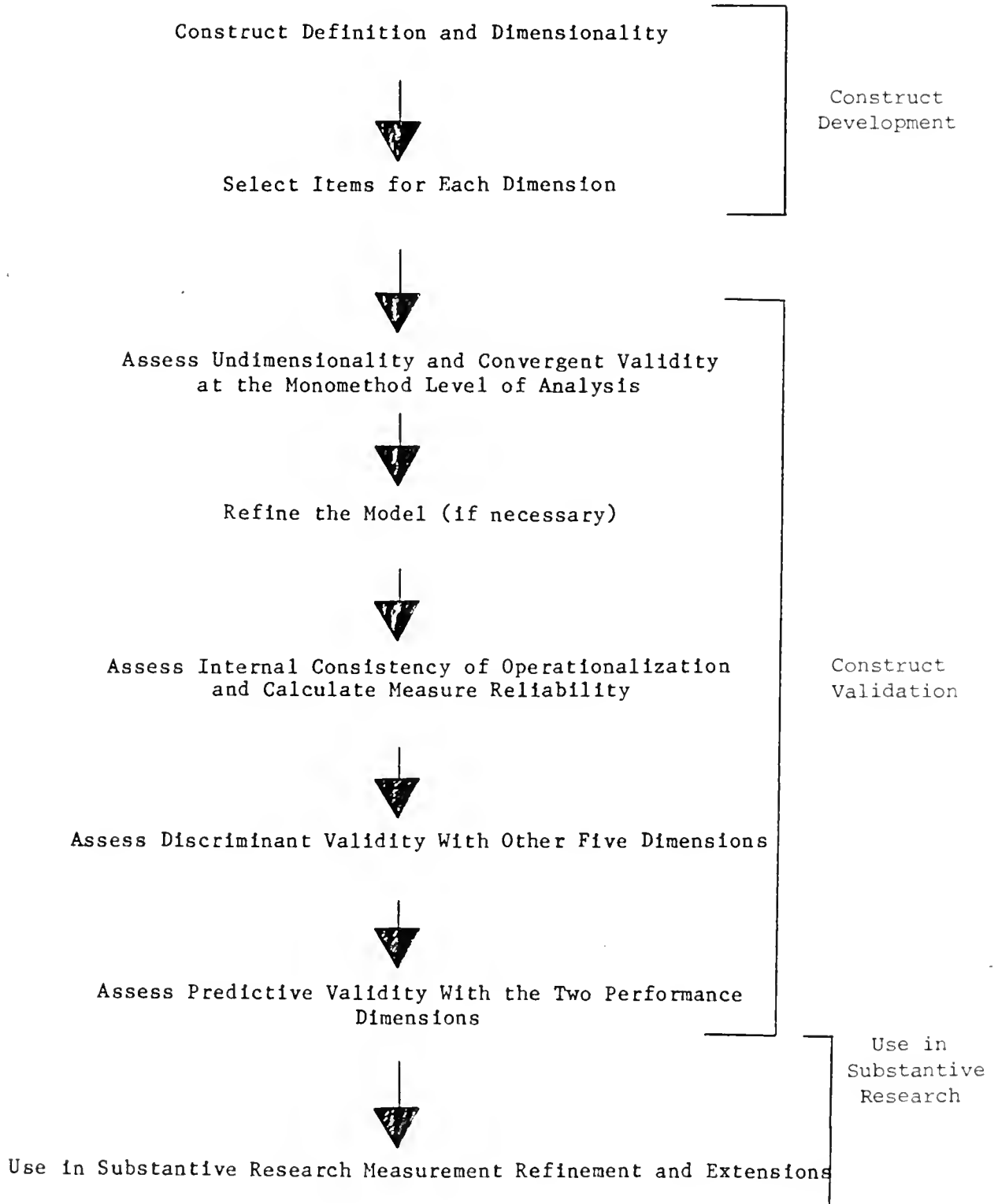Use in Substantive Research Measurement Refinement and Extensions
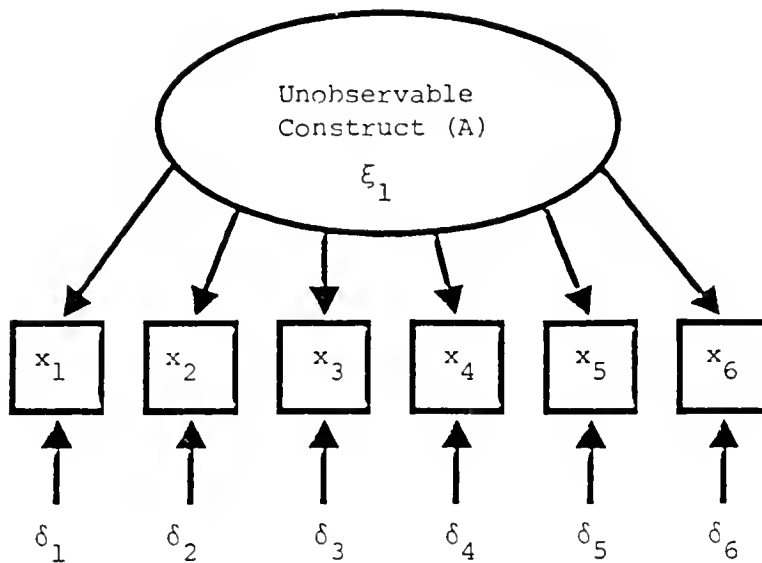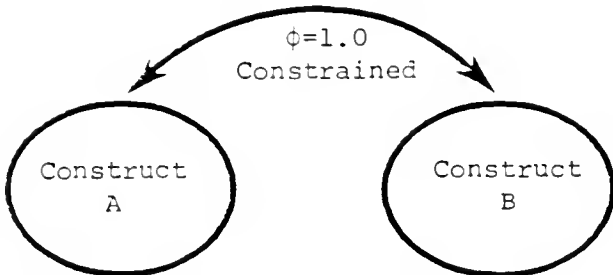
Figure 2

A Validity Assessments: A Schematic Representation
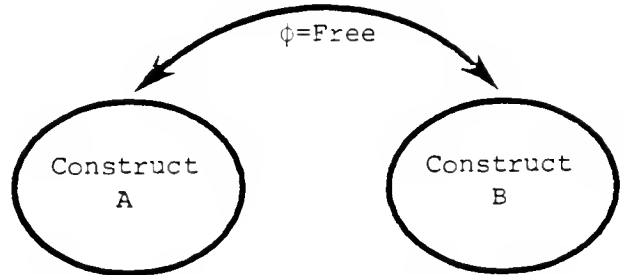
I. Unidimensionality and Convergent Validity

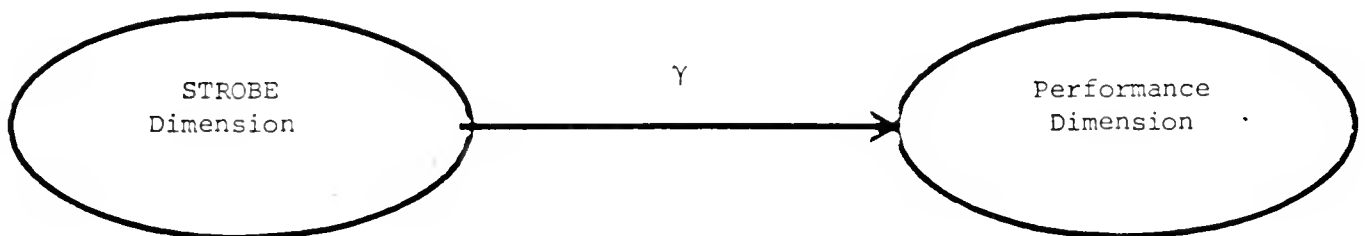### II. Discriminant Validity [@]

Constrained Model   Unconstrained Model

III. Predictive Validity [@]

[@] Only the latent constructs are shown. For clarity, the measurement models are not drawn.

Table 1

A Summary of The Six Dimensions of the STROBE Construct

Dimension	Description	Literature Support
Aggressiveness	The posture adopted in its allocation of resources for aggressive market share seeking behavior.	Buzzell, Gale, & Sultan (1975); Hofer & Schendel (1978); Miles & Cameron (1982)
Analysis	The overall problem-solving and decision-making posture at the organizational level.	Miller & Friesen (1982); Grant & King (1982); Fredrickson (1984)
Defensiveness	The overall posture of defending one's core strengths and technology.	Miles & Snow (1978) Thompson (1967) Miles & Cameron (1982)
Futurity	The degree of futurity reflected in current strategic decisions.	Andrews (1971) Grant & King (1982) Lorange (1982)
Proactiveness	The proactive behavior in terms of partici-pation in emerging industries, experimen-tation in markets.	Miles & Snow (1978) Henderson (1979)
Riskiness	The degree of riskiness reflected in organizational decision-making.	Miller & Friesen (1982) Hertz & Thomas (1983) Bowman (1984)

Table 2

Characteristics of the Study Sample

(n = 201)

I. Title/Level of the "Informant"
    Head of the Unit   47.3%
    (i.e., Divisional President,
     Chief Operating Officer)
    Second-level   32.3%
    (i.e., Functional Heads)
    Staff Managers   20.4%
    (i.e., Strategic Planners)

II. Range of Sales of the Business Unit
    Less than $5 million   3.5%
    $5-50 million   9.0%
    $51-100 million   19.5%
    $101-250 million   21%
    $251-500 million   14%
    $501 million - $1 billion   15%
    $1-3 billion   12.0%
    Over $3 billion   6%

III. Business Category
    Consumer Goods   45%
    Capital Goods   22.5%
    Raw or Semi-Finished Goods   3.5%
    Components for Finished Goods   12%
    Service   17%

Table 3

Assessment of Undimensionality and Convergent Validity at

Mono-Method Level of Analysis: A Summary of Results

(1) Dimension	(2) Indicators	(3) CFA Results χ^2	df	(4) p-Level	(5) Δ
Aggressiveness	4	0.417	1	.518	.99
Analysis	6	12.8	9	.172	.91
Defensiveness	4	2.86	2	.24	.95
Futurity	5	6.92	4	.14	.94
Proactiveness	5	3.67	5	.59	.97
Riskiness	5	5.05	5	.41	.92

Table 4
Assessment of Internal Consistency

(1) Dimension	(2) No. of Indicators	(3) Cronbach's α	(4) ρ_c
Aggressiveness	4	0.52	0.68
Analysis	6	0.62	0.67
Defensiveness	4	0.53	0.53
Futurity	5	0.60	0.61
Proactiveness	5	0.60	0.64
Riskiness	5	0.53	0.53

Table 5

Assessment of Discriminant Validity

Test		(1) ϕ		(2) Model χ^2(df)		(3) χ^2_d
#	Description	ML Est	t-value	Constrained	Unconstr.	Difference
	Aggressiveness With:					
1	Analysis	-.079	- .078	122.98(34)	38.06(33)	84.92(***)
2	Defensiveness	.109	0.96	77.85(19)	34.25(18)	43.60(***)
3	Futurity	-.130	-1.28	112.75(25)	29.78(24)	82.97(***)
4	Proactiveness	-.092	- .90	114.70(26)	26.07(25)	88.63(***)
5	Riskiness	.253	2.50(**)	87.55(26)	42.74(25)	44.81(***)
	Analysis With:					
6	Defensiveness	.947	12.16(***)	60.14(35)	59.72(34)	0.42
7	Futurity	.901	14.46(***)	90.52(43)	88.33(42)	2.19
8	Proactiveness	.426	4.48(***)	153.95(44)	105.29(43	48.66(***)
9	Riskiness	-.151	-1.47	127.57(44)	70.86(33)	56.71(***)
	Defensiveness With:					
10	Futurity	.82	9.41(***)	54.06(26)	49.90(25)	4.16(*)
11	Proactiveness	.51	4.84(***)	79.84(27)	58.89(26)	20.95(***)
12	Riskiness	.00	0.00(***)	61.16(27)	47.39(26)	13.77(***)
	Futurity With:					
13	Proactiveness	.324	3.24(***)	138.88(34)	78.88(33)	60.00(***)
14	Riskiness	-.016	0.15	137.15(34)	81.13(33)	56.02(***)
	Proactiveness With:					
15	Riskiness	-.079	-.785	122.14(35)	68.92(34)	53.22(***)

(*)   - p < .10
(**) - p < .01
(***) - p < .001

Table 6

Assessment of Predictive Validity With Performance

STROBE Dimensions	(1) Growth	(2) Performance Dimensions	(3) Profitability	(4)
	γ	t-value	γ	t-value
Aggressiveness	0.087	0.937	-0.220	-2.429 (***)
Analysis	0.194	1.987 (**)	0.312	3.226 (***)
Defensiveness	0.161	1.468	0.434	3.635 (***)
Futurity	0.153	1.565	0.128	1.387
Proactiveness	0.294	2.855 (***)	0.489	4.493 (***)
Riskiness	-0.011	-0.117	-0.413	-4.066 (***)

Appendix - I

Final 29-Indicator Scale For The Six-Dimensional Model of STROBE[a]

Aggressiveness Dimension
1   Sacrificing profitability to gain market share
2   Cutting prices to increase market share
3   Setting prices below competition
4   Seeking market share position at the expense of cash flow and profitability

Analysis Dimension
1   Emphasize effective coordination among different functional areas
2   Information systems provide support for decision making
3   When confronted with a major decision, we usually try to develop through analysis
4   Use of planning techniques
5   Use of the outputs of management information and control systems
6   Manpower planning and performance appraisal of senior managers

Defensiveness Dimension
1   Significant modifications to the manufacturing technology
2   Use of cost control systems for monitoring performance
3   Use of product management techniques
4   Emphasis on product quality through the use of quality circles

Futurity Dimension
1   Our criteria for resource allocation generally reflect short-term considerations (rev)[b]
2   We emphasize basic research to provide us with future competitive edge
3   Forecasting key indicators of operations
4   Formal tracking of significant general trends
5   "What-if" analysis of critical issuess

Proactiveness Dimension
1   Constantly seeking new opportunities related to the present operations
2   Usually the first ones to introduce new brands or products in the market
3   Constantly on the look out for businesses that can be acquired
4   Competitors generally preempt us by expanding capacity ahead of them (rev)
5   Operations in larger stages of life cycle are strategically eliminated

Riskiness dimension
1   Our operations can be generally characterized as high-risk
2   We seem to adopt a rather conservative view when making major decisions (rev)
3   New projects are approved on a "stage-by-stage" basis rather than with "blanket" approval (rev)
4   A tendency to support projects where the expected returns are certain (rev)
5   Operations have generally followed the "tried and true" paths (rev)

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[a]A Matrix of zero-order correlations among the 29-indicators is available on request.

[b](rev) - Reverse scored.

Appendix - II

The Indicators Used to Measure Business Performance

Growth Dimension

1   Sales growth position relative to competition
2   Satisfaction with sales growth rate
3   Market share gains relative to competition

Profitability Dimension

1   Satisfaction with return on corporate investment
2   Net profit position relative to competition
3   ROI position relative to competition
4   Satisfaction with return on sales
5   Financial liquidity position relative to competition